Responsible Care:
A Total Commitment

TRANSPORTATION CODE OF PRACTICE

PART 2. ACCIDENT PREVENTION

Each member company shall have an active program designed to continuously improve safety and to prevent accidents during the transportation cycle which:

- establishes criteria for selecting the mode of transport, the specifications for the transportation equipment and container and inspection and maintenance of these during use
- establishes criteria for selecting carriers which include safety performance and programs, inspection and maintenance procedures for equipment, selection and training of drivers and support staff, and assistance to carriers in meeting these criteria
- identifies alternate transportation modes and routes which minimize the exposure of people and environmentally sensitive areas to the hazards inherent in the transportation mode
- establishes standards for equipment used in loading and unloading containers including containment and emergency response facilities in the event of an accidental release
- provides procedures and training for persons who load or unload the containers
- deals effectively with hazards involved in the return, cleaning, reuse, servicing and disposal of containers
- clearly identifies content of containers.

TRANSPORTATION CODE OF PRACTICE

PART 2. ACCIDENT PREVENTION

2.1 OBJECTIVES

The objectives of TRANSCAER focus primarily on this part of the transportation code: accident prevention. This is clearly stated in the first objective:

- Reduction in the number and severity of transportation incidents and their impact on people and the environment.

It is only by stressing safety first in the transporting of chemicals that we can achieve the second objective:

- Reduced public concern about the hazards and risks of transportation incidents.

Furthermore, an integral part of this section is the third objective:

- Increased cooperation between the chemical and transportation industries in reducing incidents and concerns.

A cooperative effort by the industries concerned is likely to be much more effective in improving the level of chemical transportation safety. Both shippers and carriers have a direct interest in safer performance, and both have a responsibility to achieve this. In the past, legal implications occasionally led to defensive attitudes by the parties involved in chemical shipment, and a cautious approach to the questions of responsibility and liability. As the next section shows, however, it makes good sense for shippers and carriers to work together, since they both share in the responsibility for protecting the public from chemical transportation accidents.

2.2 RESPONSIBILITY AND LIABILITY

Part 1 of this manual emphasized the need for clear policies, standards and procedures to control the range of possible decisions open to employees, so that decisions are made by those having the knowledge

and experience to assess potential risks and thereby avoid hazardous courses of action.

Shipping a load of material involves several decisions which can affect the safety of the operation. Some of the obvious ones are: selection of mode, carrier, equipment, loading procedure and route.

The authority and responsibility for developing specific controls for these decisions must be clearly defined, to ensure that those drawing up the controls are fully qualified to do so. Those having the authority and responsibility for the decisions themselves can then be identified in the appropriate policies, standards or procedures. These should be communicated to all appropriate employees, so that persons do not unwittingly attempt to make decisions where they are not qualified to do so. Employees should be able to answer the question: "Who in your company decides which mode, carrier, route, etc., may or may not be used?"

This does not necessarily mean centralizing all authority in the higher levels of the organization. Decision making can still be delegated as far down as is practical, but those given the authority must also have the necessary knowledge and experience to assess potential risks at that level. This is where well-written controls can greatly assist in delegating authority, since it is then clear what training is needed to ensure safe decision-making for any task. The employee concerned also has a reference as a guide, and should be able to understand not only what he is doing but also why he is doing it.

Let's look at an example of what can happen all too easily in the absence of proper controls:

> Nebulous Chemical Company is a rather loosely-run organization, if indeed you can call it that. The senior managers don't believe in a lot of written procedures, because they've known one another for years; they've never needed them before, so why now?
>
> Carrier selection is usually by the distribution manager, who uses a few trucking companies "to keep their pencils sharp." He's away on vacation for a month, so the warehouse supervisor is filling in for him as usual – or was, until he fell sick yesterday.

A rush order came through to shipping just as the warehouse foreman and shipping clerk were having a coffee. It just so happened that Joe Blow, president of Joe Blow Trucking Inc., had stopped by with one of his sales pitches. He offered them a special, since he figured on back-hauling a load for someone else anyway and he had a unit free. The company used Blow occasionally, so why not? After all, he'd just handed out a couple of pairs of tickets for the ball game that night.

Later, the foreman and clerk couldn't really say just who made the decision – "it was really a sort of joint thing, you know what I mean?" It was too bad that Joe's unit needed a brake job and the driver, who wasn't one of his regulars, didn't realize until it was too late. They're sure glad the carrier is responsible and not Nebulous, considering how many people got hurt in the mess.

But *does* the shipper's legal responsibility extend simply to calling a carrier and loading the vehicle properly – or is there more? The answer to this is that there is definitely more, and it is important. Consider these three legal terms which could really hit a company hard in a case such as this:

Negligent Entrustment

The shipper selected the mode and the carrier. It made a conscious decision. If the carrier then fails to transport the goods safely, could the shipper have foreseen this? If it can in any way be proven that the shipper should have known that the carrier had deficiencies, the former bears some of the responsibility and will share in the cost of the incident.

Strict Liability

This is liability which does not depend on fault or negligence. If someone does something for his own benefit, and something goes wrong causing others to suffer, that person can be held liable regardless of the actual cause of the injury. Since Nebulous sold and shipped the chemicals for intended profit, it could be held liable for damage even if the carrier's negligence caused the accident.

In a current U.S. case shipping acrylonitrile through a populated area has so far been determined to constitute as "abnormally dangerous" activity, and the *shipper* is liable under the doctrine of strict liability.

Absolute Liability

This is liability *without defence,* determined by statute. It can be found in the Ontario "Spills Bill", Part IX of the Environmental Protection Act. In this bill, there are no defences available to an owner or person in control of a pollutant against a claim for compensation by third parties in cleaning up a spill (absolute liability). The owner and person in control are also responsible for loss or damage arising from the spill (strict liability).

This is why companies which continue to operate without clear controls to ensure that decisions are made by persons who are qualified to do so are asking for trouble when it comes to transporting dangerous goods. To avoid such situations it is most important to establish the ground rules for employee decision-making in advance, by appropriate policies, standards and procedures. And for this, of course, it is necessary to identify the appropriate selection criteria.

2.3 SELECTION CRITERIA

The code requires member companies to establish criteria for the selection of mode, equipment specifications and carriers, and to identify alternative modes and routes which minimize risk exposure.

Although selection of mode is likely to be constrained by customer and product service requirements so that a choice between all modes is unlikely for every shipment, it is useful to review key safety aspects of shipment via the various modes available. The most frequently used modes, highway and rail, will be dealt with separately at the TRANSCAER seminar, and representatives of carrier organizations in these modes will also be present to explain the carrier's role in accident prevention. The highway role is a special case in itself because of the wide range of carriers and standards facing shippers, and the CCPA is therefore introducing the Motor Carrier Evaluation Program to assist member companies in carrier selection here; this also has a great bearing on mode selection, since the expected risk in the highway mode for comparison and mode selection is strongly influenced by the performance of the individual carrier concerned.

Other requirements of this section of the code, while important in accident prevention, are covered by material in the appendices of this manual, by widely available reference works or by other training

courses, and are therefore not dealt with here. For more information on these subjects, please ask the seminar staff or write to the CCPA.

Some of the safety characteristics of the various modes will now be reviewed in the following order: air, marine, intermodal and then, because of their special significance, rail and highway.

2.4 REQUIREMENTS BY MODE

Safety criteria for mode selection have not yet been clearly established because of the difficulty of quantifying the relative risks involved. However, all regulations must be followed for any mode used.

The first step is to define the hazards involved and classify the products. This is straightforward for most single chemical compounds, but the classification of mixtures requires both technical and regulatory expertise.

The next step is to check any regulatory restrictions which apply to the transportation of these products, and include compliance with these in shipping procedures.

Customer and product service requirements should then be examined after regulatory compliance for each mode under consideration is assured.

A check should then be made of the route geography for each mode to assess the risk due to such features as: winding, twisting roads, etc.; location of populated areas; environmentally sensitive areas.

Comparative risk assessments of the two major modes, road and rail, have not yet conclusively proven that either is inherently safer than the other for dangerous goods transportation. The two modes differ in risk in that the highway mode is characterized by a larger number of incidents with lesser severity while rail shows a lower incident rate but with a greater potential for more serious consequences. Risk assessment is a comparatively young science on which attention is being increasingly focused, and more information on this topic should be available in the future. Care should be taken with any comparative risk assessment, however, to examine the assumptions made in deriving the results, as these are not always openly stated and can have a great influence on the conclusions.

1. Air

Classification is extremely important in this mode, and care must be taken as the IATA classification is slightly different from the TDGA regulations; for example, all class 3 is treated together, with no divisions.

The classification will dictate:

- whether the material can be shipped by air at all, whether it can be shipped by cargo aircraft only or whether it is permitted on passenger aircraft.
- the maximum net quantity per package
- detailed packaging instructions
- documentation which must accompany the shipment.

The regulations indicate clearly that compliance with the above including all documentation is the responsibility of the shipper. These regulations have been developed by experts and, while they appear at first sight to be very restrictive, compliance means that safety is virtually guaranteed.

The procedures, however, apply to all air shipments *including samples*. Companies shipping samples by air must therefore ensure that they have an effective procedure in place to cover this.

2. Marine

The classification here, which was developed by the International Maritime Organization (IMO) in conjunction with the United Nations Committee of Experts on the Transportation of Dangerous Goods, is very similar to the TDGA regulations.

Classification is the responsibility of the shipper. Care is needed here for proper packaging and also to ensure compliance with restrictions on permissible storage combinations when mixed products are shipped in the same container. For containers loaded with dangerous goods a "Container Packing Certificate" should be provided which certifies that this has been properly carried out.

Documentation for dangerous goods should be in accordance with the IMO code, including the flash point for flammable materials.

The shipment of bulk products by sea is a very specialized business and is probably outside the scope of most member company transportation personnel. Care must be taken to ensure that crews as well as vessels are capable of handling the products involved, and that the shipper has policies and procedures in place for this.

Shippers can, however, select a port which is well-situated and is capable of handling the goods involved including basic response to emergencies. Such questions as the need to ship through densely-populated areas to reach the port and whether better alternatives exist should also be identified and answered by careful examination of the entire operation, and carrier selection at *both* ends of a marine move should be done in accordance with the shipper's standards for that mode.

3. Intermodal

One problem area with intermodal shipments is the tendency to concentrate on the line-haul section, while terminal carriers receive little attention.

Selection standards must be applied to *all* carriers involved, including piggyback and forwarding companies. A company shipping products by intermodal container should be confident that anyone handling its goods is qualified to do so, and should apply standards to all carriers involved which are consistent for that mode.

Packaging and loading should be done in accordance with the mode which has the most stringent requirements. For example, should a TOFC trailer be loaded in the same way as a highway one, or should it be blocked and braced for rail? Documentation should also be prepared in accordance with all modes of transport.

4. Rail

Railway operations in Canada have been covered for many years by government regulations, from the Board of Transport Commissioners for Canada to the Canadian Transport Commission, which is now in the process of being incorporated into Transport Canada.

Rules and regulations cover all aspects of railway carriage, from operating standards, inspection and movement of dangerous goods through to the terms and conditions of the bills of lading.

Shippers should be fully aware of the rules and regulations which apply to them. For example, while the TDGA regulations for packaging are still in draft form at the time of writing, for the rail mode they have been prescribed by the railway dangerous goods regulations (the "Red Book") for many years. Shipments by rail must therefore already be in compliance with these – including "piggyback" or TOFC shipments.

In Canada the vast majority of rail shipments are handled by the two carriers CN and CP, and a special section from these organizations is included at the end of this part of the manual. This covers many of the actions which shippers can take to reduce the risk of accidents while transporting chemicals by rail in this country. In addition, shippers should examine the routing of their shipments, especially for those going to the U.S. For products with significant hazard ratings it makes sense to consider those routes which avoid major metropolitan areas or other zones of high vulnerability.

5. Highway

The highway mode involves the shipper in the greatest number of significant decisions, quite apart from ensuring that shipments are packaged and prepared in accordance with the regulations. Not only is this already the case, but the number of options available and hence the possibility of an unsound decision are expected to increase with deregulation.

The highways are also a very public marketplace in which to operate, and the public perception of trucking is becoming increasingly negative. Chemical trucking by road is often highly visible to exposed populations, which are much more familiar with general highway safety regulations and practice than is the case for other modes. Many unsafe practices such as careless driving or poorly maintained vehicles are readily apparent to the general public, which is already questioning whether the risks have reached unacceptable levels. Deregulation of the trucking industry will increase these pressures.

Shippers have asked for and will now receive greater freedom of entry into trucking, with consequent pressures on those in this field to cut costs. Some operators will respond by ignoring safety measures such as maintenance schedules, hours of service and restrictive regulations in

the attempt to stay in business, and in doing so they may also be able to offer – temporarily – more competitive rates than those which put safety first.

In the long term the better-run companies will survive, because proper maintenance, observance of speed limits and well-trained, conscientious drivers eventually cost less. It makes good business sense, for example, to move goods on a four lane highway at 90 km/hour, when every additional 10 km/hour adds between five and ten cents a kilometer to operating costs.

In the short run, however, cutting corners on safety appears to pay off – until something goes wrong. And here the shipper using such an operator is caught in four ways at once. First, accidents are more likely to occur to such a carrier in the first place; secondly, the carrier may not have the financial resources or insurance to cover the cost of clean-up and damages; third, the shipper – who willfully selected the carrier when better run companies were available – is perceived to be guilty by negligent entrustment, and may well be found so by a court; and fourth, from the public viewpoint the incident is a clear result of putting profit before safety, both by the carrier and by the shipper.

Shippers therefore have a clear responsibility to select only those carriers which operate safely in the first place. Because the trucking industry is so large and fragmented, complete control through government regulations is not practical. This means that shippers of dangerous goods – the chemical companies – must regulate themselves, or expect to incur increasingly severe penalties and public anger. These same high standards demanded from external carriers must also apply to a shipper's private fleet, or to customers' trucks which are permitted to pick up their goods.

The Motor Carrier Evaluation Program

To assist member companies in assessing the level of operating safety of their carriers, their own truck fleet or their customers' trucks for comparison with an appropriate standard, the CCPA's transportation and distribution highway subcommittee has, in conjunction with the tank truck division of the Ontario Trucking Association, developed the motor carrier evaluation survey. A copy of this is included in this manual as appendix C-1.

The survey booklet may be filled in by a carrier either at the request of a shipper or at the carrier's own instigation. If a carrier declines a request

by a shipper for an evaluation, the CCPA file will state that the carrier declined.

The carrier then forwards the completed form via the CCPA office to the highway subcommittee, which will arrange for a two-person team to interview the carrier and audit a terminal operation. In the case of national carriers this will be done on a regional basis.

The team will complete a survey based on the interview and audit. This survey is returned to the carrier for acceptance and signature by an authorized officer, then returned to the CCPA office. If the carrier does not accept the evaluation the CCPA file will show that the carrier declined; no unauthorized surveys will be distributed.

This process will enable member companies located in one part of the country to evaluate carriers in another, and will reduce the burden of multiple audits. Any survey which is on file at the CCPA may then be distributed by the carrier as desired.

Motor Carrier Selection Criteria

The transportation code of practice states that "each member company shall have an active program ... which establishes criteria for selecting carriers ... " It must be stressed here that *it is the responsibility of each company to set its own standards.* Neither the CCPA nor the T&D highway subcommittee can do this. However, to *assist* member companies in establishing their own standards, the highway subcommittee has developed criteria for two levels:

- Acceptable
- Preferred

One of the aims of motor carrier evaluation is to foster the development of higher standards of highway transportation safety for the shipment of chemicals in Canada, and in this regard the preferred criteria represent the desirable level of performance. Realistically, however, it may be difficult for carriers to meet the acceptable criteria in all areas at the start, and this will become the initial objective.

The standards which are established should therefore be chosen in relation to the degree of risk presented by the shipment, and low-hazard products may be handled by a carrier whose rating is not acceptable for more dangerous cargos. Again, each company is responsible for setting its own standards.

One final point remains regarding motor carrier evaluation, but it is most important and emphasizes yet again the need for clear policies which have been communicated and understood by all those involved. Do not establish standards, then fail to follow through by allowing the tail to wag the dog. To deliver loads safely takes time, and schedules for production and delivery must be realistic. This means that "safety first" must become a part of everyone's thinking *before* that "urgent" order comes in. Late is late – do not request either company employees or a carrier to deliver a load at a specific time if it cannot be done legally and safely. "Rush" may become "never". Do not compromise on safety, for deviation from standards easily becomes no standards at all.

THE CANADIAN CHEMICAL PRODUCERS' ASSOCIATION

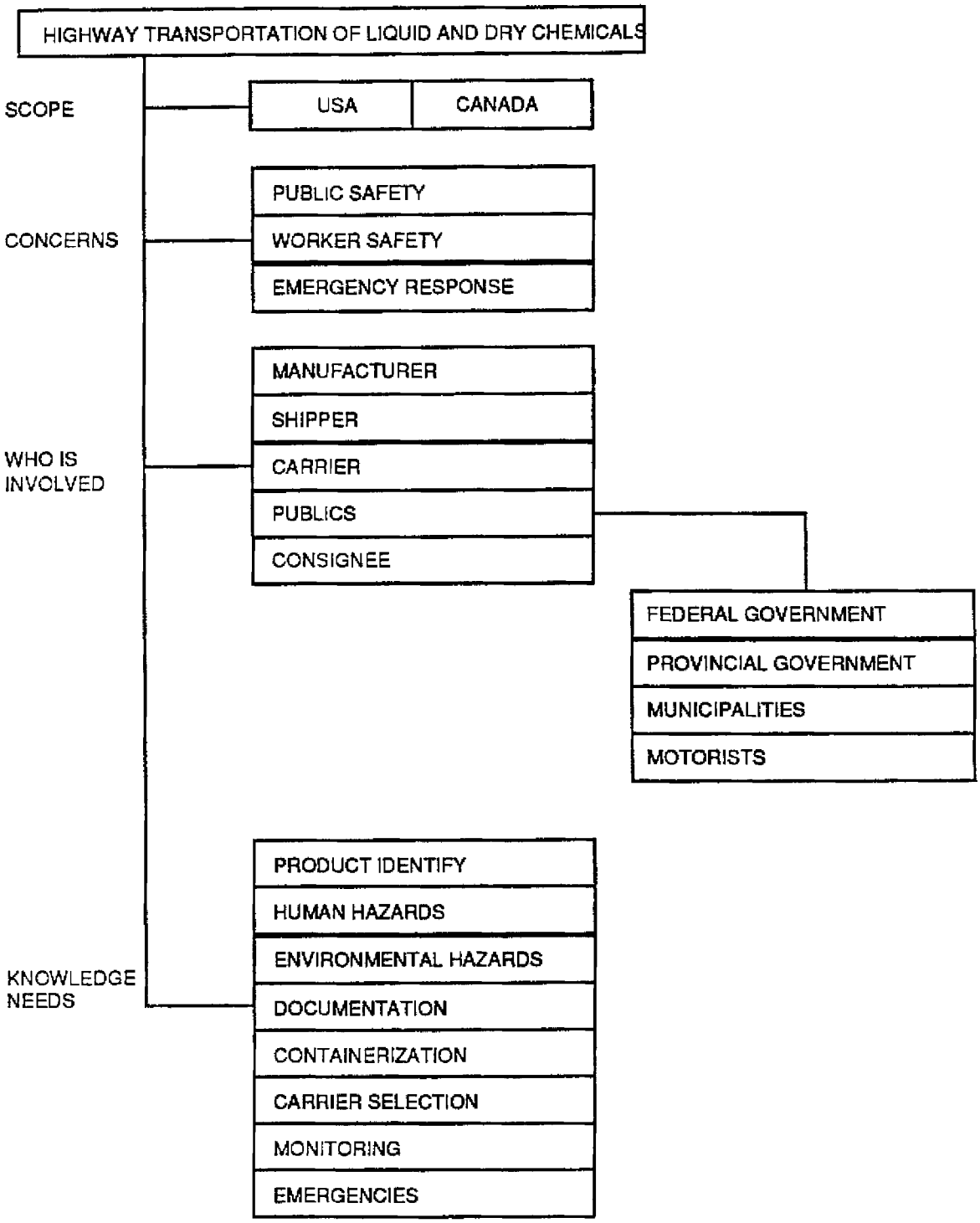
TRANSCAER SEMINAR

ACCIDENT PREVENTION - ROLES AND RESPONSIBILITIES

"THE HIGHWAY CARRIER"

January 1, 1988

Barry E. Hedquist
Manager, Loss Prevention
Trimac Transportation Services Ltd.
Calgary, Alberta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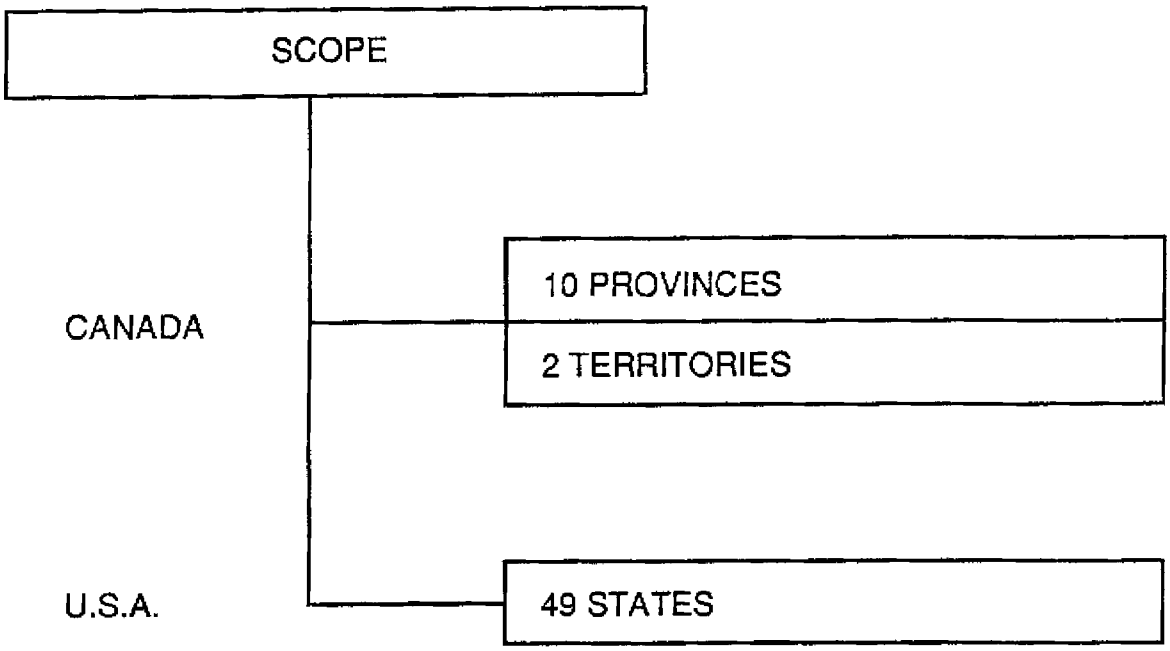
SCOPE
USA
CANADA
CONCERNS
PUBLIC SAFETY
WORKER SAFETY
EMERGENCY RESPONSE
WHO IS INVOLVED
MANUFACTURER
SHIPPER
CARRIER
PUBLICS
CONSIGNEE
FEDERAL GOVERNMENT
PROVINCIAL GOVERNMENT
MUNICIPALITIES
MOTORISTS
KNOWLEDGE NEEDS
PRODUCT IDENTIFY
HUMAN HAZARDS
ENVIRONMENTAL HAZARDS
DOCUMENTATION
CONTAINERIZATION
CARRIER SELECTION
MONITORING
EMERGENCIES


SCOPE
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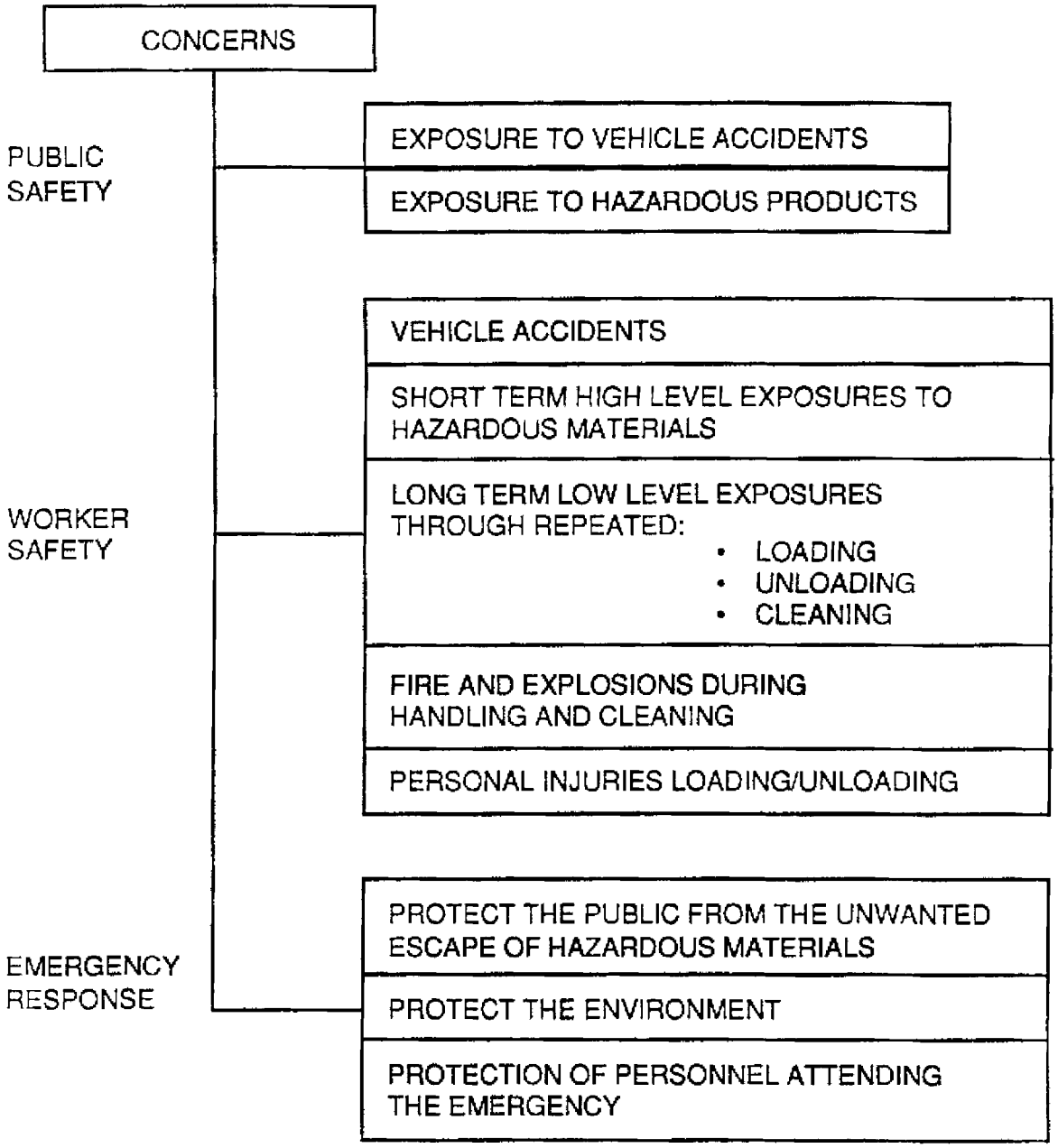
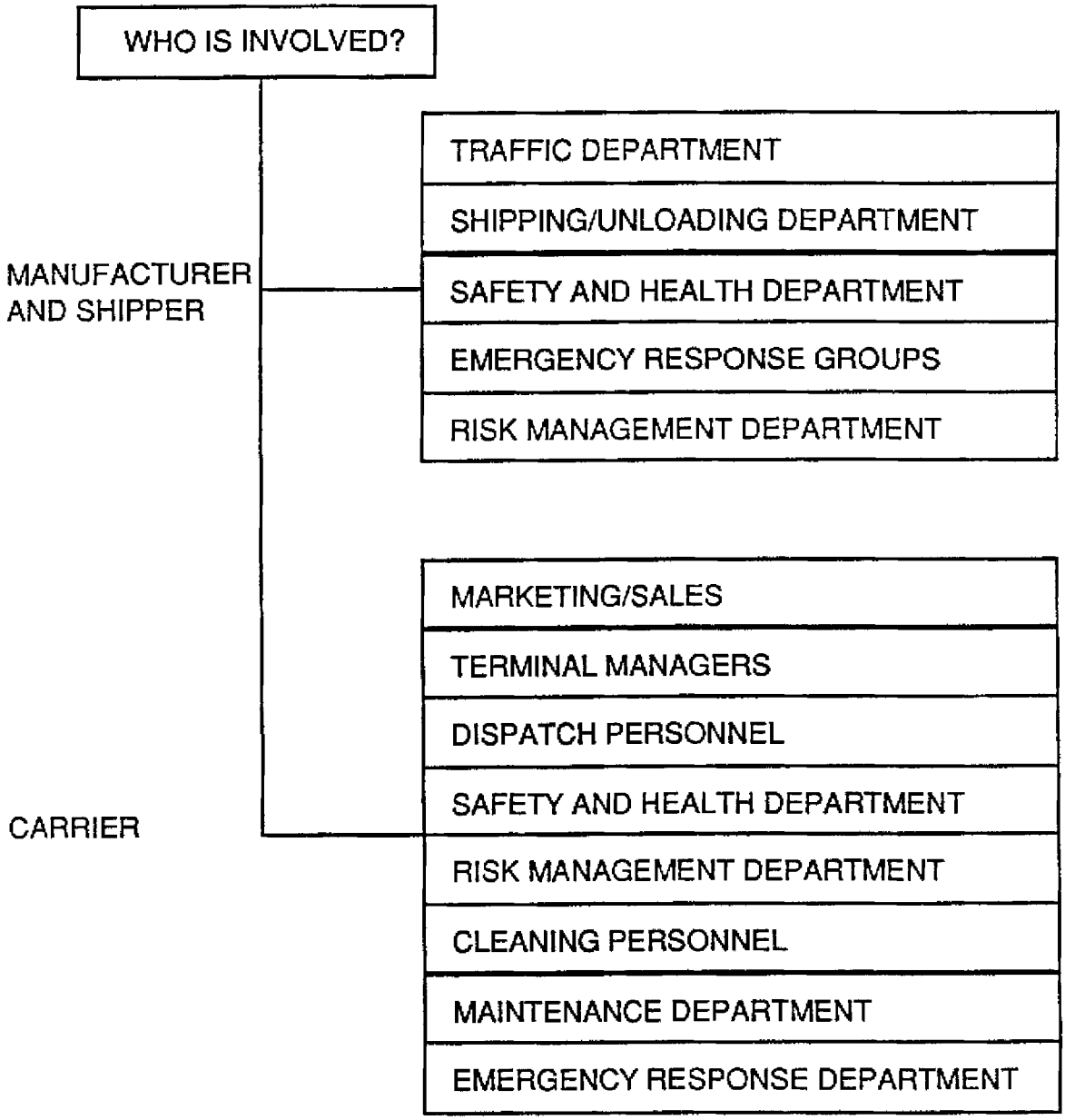
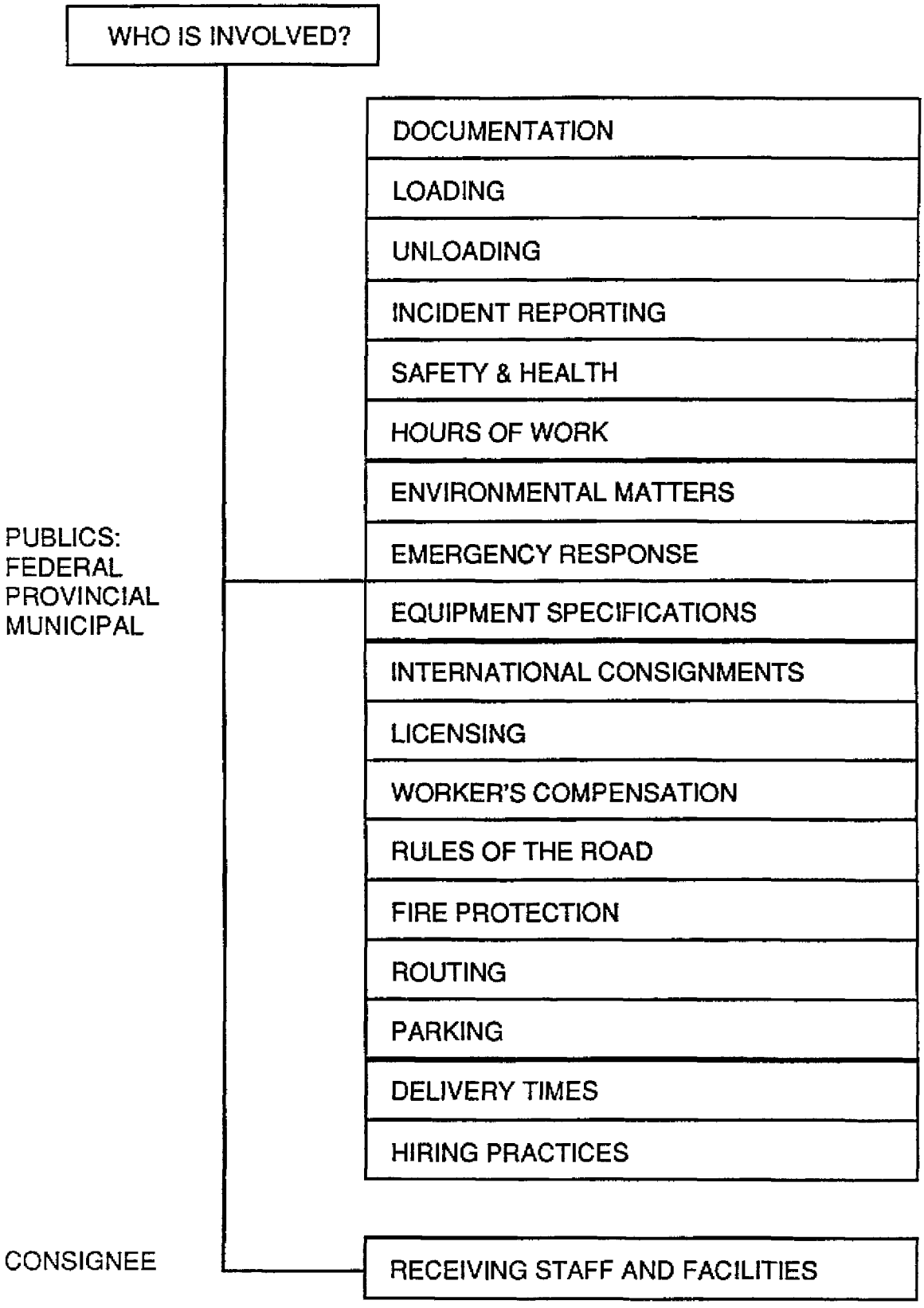
10 PROVINCES
2 TERRITORIES
U.S.A.
49 STATES


CONCERNS
PUBLIC SAFETY
EXPOSURE TO VEHICLE ACCIDENTS
EXPOSURE TO HAZARDOUS PRODUCTS
WORKER SAFETY
VEHICLE ACCIDENTS
SHORT TERM HIGH LEVEL EXPOSURES TO HAZARDOUS MATERIALS
LONG TERM LOW LEVEL EXPOSURES THROUGH REPEATED:
• LOADING
• UNLOADING
• CLEANING
FIRE AND EXPLOSIONS DURING HANDLING AND CLEANING
PERSONAL INJURIES LOADING/UNLOADING
EMERGENCY RESPONSE
PROTECT THE PUBLIC FROM THE UNWANTED ESCAPE OF HAZARDOUS MATERIALS
PROTECT THE ENVIRONMENT
PROTECTION OF PERSONNEL ATTENDING THE EMERGENCY


WHO IS INVOLVED?
MANUFACTURER AND SHIPPER
TRAFFIC DEPARTMENT
SHIPPING/UNLOADING DEPARTMENT
SAFETY AND HEALTH DEPARTMENT
EMERGENCY RESPONSE GROUPS
RISK MANAGEMENT DEPARTMENT
CARRIER
MARKETING/SALES
TERMINAL MANAGERS
DISPATCH PERSONNEL
SAFETY AND HEALTH DEPARTMENT
RISK MANAGEMENT DEPARTMENT
CLEANING PERSONNEL
MAINTENANCE DEPARTMENT
EMERGENCY RESPONSE DEPARTMENT


WHO IS INVOLVED?
DOCUMENTATION
LOADING
UNLOADING
INCIDENT REPORTING
SAFETY & HEALTH
HOURS OF WORK
ENVIRONMENTAL MATTERS
EMERGENCY RESPONSE
PUBLICS:
FEDERAL
PROVINCIAL
MUNICIPAL
EQUIPMENT SPECIFICATIONS
INTERNATIONAL CONSIGNMENTS
LICENSING
WORKER'S COMPENSATION
RULES OF THE ROAD
FIRE PROTECTION
ROUTING
PARKING
DELIVERY TIMES
HIRING PRACTICES
CONSIGNEE
RECEIVING STAFF AND FACILITIES